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Propositions (stellingen)

1. Combining family with twin data, for which parental information is missing, via a joint likelihood can increase efficiency of parameter estimates for effects depending on maternal-offspring genotype combinations. [This thesis]
2. Tests that make plausible restrictions on the parameter space often have increased power against the unrestricted global haplotype test for association or the single-SNP tests used in standard GWAS. [This thesis]
3. Efficiency gain for parameter estimates based on a retrospective likelihood, compared to a prospective likelihood, is a function of the number of parameters used to model the distribution of risk factors and the effect sizes of risk factors. [This thesis]
4. Carefully chosen low-variance data transformations, even though they increase dimensionality of data sets, improve classification accuracy. [This thesis]
5. The prospective logistic regression analysis of case-control data is efficient in the sense that it achieves the variance lower bound of the underlying 'semi-parametric' model that allows the covariate distribution to be nonparametric. [Breslow et al. 2001]
6. Under the case-control design, the variance lower bound for estimators of the regression parameters under particular constraints or models for the covariate distribution will be lower than that of the more general model that allows a completely nonparametric covariate distribution. [Chatterjee and Carroll 2005]
7. The natural habitat of statistics is the border region between the trivial and the impossible. [David Siegmund and Benjamin Yakir 2007, *The Statistics of Gene Mapping*].
8. The mere formulation of a problem is far more essential than its solution, which may be merely a matter of mathematical or experimental skills. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science [Albert Einstein 1879-1955].
9. Πᾶσά τε ἐπιστήμη χωριζομένη δικαιοσύνης καὶ τῆς ἄλλης ἀρετῆς πανουργία, οὐ σοφία φαίνεται [Plato, *Menexenus*, 247a.]. (English: Every form of knowledge when sundered from justice and the rest of virtue is seen to be plain roguery rather than wisdom.)
10. We are what we repeatedly do. Excellence then, is not an act but a habit. [Will Durant, *The Story of Philosophy*, 1926]